

SECURE STUDENT ATTENDANCE SYSTEM
BASED ON GEO-LOCATION AND QR CODE
TECHNOLOGIES

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I/We* hereby declare that I/We* have checked this thesis/project* and in my/our* opinion, this thesis/project* is adequate in terms of scope and quality for the award of the degree of *Doctor of Philosophy/ Master of Engineering/ Master of Science in

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ABSTRAK

Sistem kehadiran pelajar menggunakan teknologi geo-lokasi dan kod QR(*Quick Response*) adalah sebuah sistem yang memudahkan pesyarah mengambil kedatangan pelajar dengan cara lebih sistematik dan mudah digunakan. Sistem ini dicipta sebagai penambahbaikan sistem kehadiran sedia ada. Sebagai contoh, kebanyakan pensyarah di Universiti Malaysia Pahang masih lagi menggunakan kaedah manual bagi mengambil kehadiran pelajar iaitu pesyarah perlu memanggil nama setiap pelajar sebelum memulakan sesi pembelajaran. Kaedah ini mengambil masa lebih kurang 10 hingga 15 minit sebelum sesi pembelajaran dapat dijalankan. Justeru, sistem kehadiran pelajar menggunakan teknologi QR dan geo-lokasi ini dikira sebuah alternatif untuk mengatasi masalah pembaziran masa pembelajaran. Pensyarah cuma perlu meletakkan kod QR pada skrin hadapan kelas semasa sesi pembelajaran. Oleh itu, pelajar hanya perlu mengimbas kod tersebut menggunakan sistem ini. Selain itu, kebelakangan ini sering terjadi kes pelajar meniru tandatangan rakan mereka yang tidak hadir pada lampiran borang kedatangan pelajar yang selalunya akan diedarkan oleh pesyarah pada awal sesi pembelajaran. Sistem ini menyediakan fungsi mengesan lokasi dimana kod QR diimbas. Fungsi ini dicipta untuk mengelakkan pelajar menipu kehadiran mereka di dalam kelas. Sistem ini menggunakan telefon pintar sebagai medan utama kerana telefon pintar telah diaggap keperluan bagi setiap pelajar. Hampir semua pelajar mempunyai telefon pintar sendiri pada zaman serra canggih ini. Oleh itu, sistem ini lebih mudah digunakan oleh pelajar. Kesimpulannya, sistem ini telah diuji oleh pensyarah dan pelajar dari Universiti Malaysia Pahang.

ABSTRACT

Secure Student Attendance System Based On Geo-Location and QR Code Technologies is a system that facilitates lecturers to take attendance of the students more systematic and easy to use. This system is created to improve current student attendance system which uses manual sign attendance sheets. For example, many lecturers in Universiti Malaysia Pahang still use manual method to take attendance of the system, the lecturer need to call name of the students one by one before starting the learning session. This method usually takes about 10 to 15 minutes before the learning session can take place. Hence, this QR code-based system is considered as an alternative to overcome this time consuming problem. Lecturers only need to place a QR Code on the presentation slide for the students scan it using this system through their own smartphone. Additionally, there are several cases where students sign the attendance on behalf of their friends who are absent on that class. This case happens when the lecturers distribute the attendance sheets to the class during learning session. To reduce this unethical practice, the proposed system provides a location tracking function where the QR code is scanned. This function is created to prevent students from cheating their presence in the classroom. This system uses smartphones as the main field because smartphones have been regarded as an ideal for every student. Majority students nowadays have their smartphone so this system is easier to use by them. As a conclusion, this system has been through testing process among students and lecturers of Universiti Malaysia Pahang.

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LIST OF ABBREVIATIONS

RAD	Rapid Application Development
SDLC	Software Development Life Cycle
UMP	Universiti Malaysia Pahang
RAM	Random Access Memory
ROM	Read Only Memory
GB	Gigabyte
MOHE	Ministry Of Higher Education
QR	Quick Response
ID	Identification/Identity/Identifier
CCTV	Closed-circuit television

CHAPTER 1

INTRODUCTION

1.1 Introduction

Universiti Malaysia Pahang (UMP) is one of the universities where most of the lecturers still used manual way for taking attendance of the students. Students still need to manually signing attendance sheet during the class session. This manual method gives students the opportunity to deceive their attendance by asking their friend's help to sign on their behalf. Some lecturer taking attendances of students by calling name of students and manually fill in attendance system at the beginning of the class.

Taking attendance of students using manual method by signing attendance sheets is a time consuming procedure particularly when total number of students in that class are large. Some lecturers taking attendance by calling name of their students one by one at the beginning of the class. This method usually takes around ten minutes per class those total hours that may be lost up to seven hours per semester. This thesis proposes a system that can reduces the time taken for taking attendance by way of nearly 80%.

The projected resolution provides a QR code-based attendance system for the students to scan it via a specific smartphone application. Besides, statistics shows that 42% of smartphone users have an average age of 26 years old. This proves that smartphone is most common device used by students of universities or college in this era. The code will able to taking attendances of students by detecting their important data such as matric id, location and time they entering the class.

This system not only save time but also can avoid the focus of students during learning session will be disturbed. Hence, a systematic Secure Student Attendance System Based on Geo-Location and QR Code Technologies will be needed by the university.

1.2 Problem Statement

The existing attendance system is based on systematic attendance that needs lecturers to call each of their student's names at the beginning of the class to confirm the attendance is time consuming method. Typically, the attendance system is managed by each lecturer. Beside, many of the lecturers still used manual attendance method that required students to sign attendance sheets manually.

This manual method allow students to cheat the attendance by signing attendance for their friend who absent in that class. Other than that, this method also can interrupt the focus of the students during class period.

The lecturer needs to record and keep all attendance sheets. Even though lecturers keeps the attendance sheets by themselves, all attendance sheets still have probability to be lost or damage. Therefore, university should provide an innovative system that able to improve current attendance system more efficiently.

1.3 Objectives

1. To investigate efficient features that can be added to current student attendance system of Universiti Malaysia Pahang.
2. To design and develop a student attendance system that implement geo-location and QR code technologies..
3. To evaluate the effectiveness of the proposed in reducing the time taken for a lecturer taking the attendance of the students and reducing cheating behaviours among students

1.4 Scope

In order to ensure that the objective will be able to achieve, there are few scopes that will be defined. The scopes consist of three categories which are location, hardware and software.

1. Target User

- Students of Universiti Malaysia Pahang
- Lecturer of Universiti Malaysia Pahang

2. Hardware

- Android Smartphone

3. Features

- Real time reports
- Fast Scanning
- One QR code per attendance.
- Required internet connection and GPS
- More secure with limitation of valid attendance is 50 metre from class location

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